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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,111	05/27/2005	Massimo Cocchi	4235.413	3281

28410 7590 02/28/2008
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EXAMINER	
NELSON, MICHAEL E	

ART UNIT	PAPER NUMBER
1794	

MAIL DATE	DELIVERY MODE
02/28/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/509,111	COCCHI ET AL.	
	Examiner	**Art Unit**	
	MICHAEL E. NELSON	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 September 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *09/28/2004*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: Concerning Fig. 1, on page 9, line 5, the specification states "the luminophore material is set substantially at an interface 11 defined by the layers 4 and **5**." It is possible that the statement is intended to be "an interface 11 defined by the layers 4 and **6**."

2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:

4. On page 9, line 5, the specification states, "the lumiphore material is set substantially at an interface 11 defined by the layers 4 and **5**." However, there is not

item 5 in Fig. 1, to which the paragraph refers. From the adjoining paragraphs, and from the description, it is likely that Applicant intends "an interface 11 defined by the layers 4 and **6**."

5. On page 14, line 2, **oxydiazole** should be corrected to **oxadiazole**.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

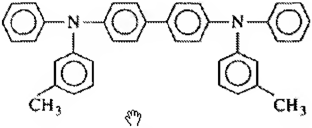
6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

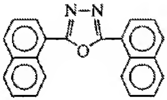
7. Claims 1, 4, 7, 24-25, 27, 29-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Lin et al. (Journal of Polymer Research, vol. 2, No. 3, pp. 133-138, July 1995).

8. Concerning claims 1 and 4, Lin et al. describe an Organic electroluminescence device comprising an anode (of ITO) (coated on glass, a well-known transparent anode, per claim 4) and a cathode (of MgAg), and an intermediate element comprising a hole transporting organic material (TPD) an electron transporting organic material (BND) and a luminophore material (coumarin-6). (see Section 2, page 134, and figure 8, page

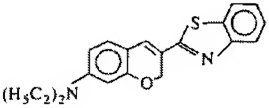
137). Lin et al. state that the coumarin-6 is excited by energy transfer from BND and TPD and/or their exciplex. (page 135)



TPD



BND



Coumarin-6

9. Concerning claim 7, Lin et al. disclose the use of TPD as the hole transporting material, and BND as the electron transporting material, and show their relative electron affinity in Figure 8 on page 137. The electron affinity of TPD is 2.7 eV, while the electron affinity of BND is 3.2 eV (a difference of 0.5 eV).

10. Concerning claims 24-25, Lin et al. disclose TPD as the hole transporting material, as shown above, which meets the limitations of claims 24 and 25 where A is biphenyl, T^1 and T^2 are both tertiary amines, and Ar^1 is tolyl (aryl) and Ar^2 is phenyl. (This material is identical to the material in Applicant's examples 5-11).

11. Concerning claim 27, Lin et al. disclose the use of BND as the electron transporting material, which is an oxadiazole where E^1 and E^2 are both naphthyl (aryl).

12. Concerning claims 29-30, Lin et al. describe the method for forming the electroluminescent device discussed above, where the materials, suspended in a polymer binder (MH-RESIN), were suspended in dichloromethane, and spin-coated (deposited) on the ITO coated glass substrate (see section 2, page 134). Coumarin-6 was selected as the emissive compound to produce light with a wavelength maximum of about 500nm (see figure 4, page 136).

13. Claims 1-2, 4, 6-10, 13-14, 24-25 and 29-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Adachi et al. (Applied Physics Letters, vol. 77, no. 6, pp. 904-906) with evidence of inherency supplied by Adachi et al. (IEEE Journal on Selected Topics in Quantum Electronics, vol. 8, no. 2, March/April 2002).

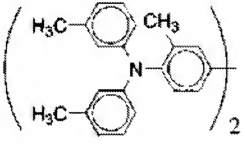
14. Concerning claims 1-2 and 4, Adachi et al. describe an organic electroluminescent device having an anode of ITO (a well known transparent anode, per claim 4), a cathode of MgAg, and an intermediate element between the anode and cathode, which (per claim 2) comprises a first layer of HMTPD (hole transporting organic material in contact with the anode) and a second layer of BCP (electron transporting organic material, in contact with first layer and the cathode (via an Alq_3 electron injection layer)). The intermediate element further comprises a luminophore material of $Ir(ppy)_3$ doped into the electron transporting portion. (single heterostructure device, see figure 3, page 905). They do not report whether the electron transport material and the hole transport material describe above form an exciplex, but given the wide difference between the respective ionization potentials and electron affinities (see

figure 3), one would predict that an exciplex would form between the two materials. However, the ability of the two materials to form an exciplex is an inherent feature of the materials themselves, and Adachi (IEEE) report that in devices containing the same materials in the same layers, but where the dopant resides instead in the hole transporting layer, luminescence from an exciplex is observed (IEEE, Fig 2, page 374). Therefore the two materials do form an exciplex.

15. Concerning claims 6-7, Adachi et al. report the ionization potential (HOMO) and electron affinity (LUMO) for the materials in the device discussed above, where the HMTPD has an ionization potential of 5.9 eV, while the BCP has an ionization potential of 6.7eV (a difference of 0.8 eV, per claim 6), while HMTPD has an electron affinity of 2.6 eV while BCP has an electron affinity of 3.2 eV (a difference of 0.6 eV, per claim 7).

16. Concerning claims 8-10, and 13-14 Adachi et al. disclose the use of $Ir(ppy)_3$ as the luminous material in the device, where (per claim 8 and 9) M is Ir, while L, L' and L''' are chelating ligands, specifically 2-phenylpyridine (per claim 13, Applicants first structure), and identical to Applicant's claim 14). The Iridium metal has a formal charge of +3 (per claim 10).

17. Concerning claims 24-25, Adachi et al. disclose that the hole transporting material is HMTPD, shown below, where A is (3,3'-dimethylbiphenyl) (aryl), and T^1 and T^2 are both tertiary amines, and Ar_1 and Ar_2 are both tolyl (aryl).



HMTPD

18. Concerning claims 29-31, Adachi et al. describe the method for forming the electroluminescent device discussed above, where each layer was deposited by high-vacuum thermal evaporation, where the first layer was deposited on the ITO anode, followed by the second layer (per claim 31). The luminophore material was chosen to emit electromagnetic radiation, specifically the frequency emitted by $Ir(ppy)_3$.

19. Claims 1-2, 4, 21-22, 24-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Murata et al. (SPIE Vol. 3476, pp. 88-95, Dec. 1998).

20. Concerning claims 1-2, 4, 21-22 and 24-25 Murata et al. describe organic electroluminescence devices comprising an anode of ITO (a well known transparent anode, per claim 4), a cathode of MgAg, and an intermediate element composed of a first layer in contact with the anode, and a second layer in contact with the cathode and the first layer (per claim 2), where the first layer comprises a hole transporting material (TPD, per claims 24-25, identical to TPD above), and the second layer comprises an electron transporting material (OXD7), which form an exciplex when undoped (page 89). The intermediate portion further includes a luminophore (rubrene, per claims 21-22 or perylene), which is doped into the electron transporting portion.

21. Claims 1-4, 6-10, 13-14, 24-25, 29-32 are rejected under 35 U.S.C. 102(a) as being anticipated by Adachi et al. (IEEE Journal on Selected Topics in Quantum Electronics, vol. 8, no. 2, March/April 2002).

22. The Office has determined the official publication date for this reference to be April 30, 2002.

23. Concerning claims 1-4, 14, Adachi et al. describe an organic electroluminescent device comprising an anode of ITO (a well known transparent anode, per claim 4), and a cathode of MgAg, with an intermediate element between the anode and the cathode, where the intermediate element comprises a first layer (of HMTPD, a hole transporting material) in direct contact with the anode, and a second layer (of BCP an electron transporting material, in contact with the cathode via an Alq electron injection layer). The intermediate element further includes a luminophore (of $Ir(ppy)_3$) in the first layer. Adachi et al. disclose that the SH-H single heterostructure discussed above includes an additional spectral component ascribed the exciplex emission between HMTPD and BCP (see Figure 1, page 373, and section III, page 373, last paragraph)

24. Concerning claims 6-7, Adachi et al. report the ionization potential (HOMO) and electron affinity (LUMO) for the materials in the device discussed above, where the HMTPD has an ionization potential of 5.9 eV, while the BCP has an ionization potential of 6.7eV (a difference of 0.8 eV, per claim 6), while HMTPD has an electron affinity of 2.6 eV while BCP has an electron affinity of 3.2 eV (a difference of 0.6 eV, per claim 7).

25. Concerning claims 8-10, and 13-14 Adachi et al. disclose the use of Ir(ppy)$_3$ as the luminous material in the device, where (per claim 8 and 9) M is Ir, while L, L' and L''' are chelating ligands, specifically 2-phenylpyridine (per claim 13, Applicants first structure), and identical to Applicant's claim 14). The Iridium metal has a formal charge of +3 (per claim 10).

26. Concerning claims 24-25, Adachi et al. disclose the use of HMTPD, as discussed above.

27. Concerning claims 29-32, Adachi et al. describe the method for forming the electroluminescent device discussed above, where the layers are deposited by high-vacuum thermal evaporation, and the first layer and luminophore are deposited together, and the luminophore material is chosen to emit radiation of a given wavelength (specifically 515 nm, emitted by Ir(ppy)$_3$).

28. Claims 1, 4, 24-25, 29-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim et al. (Molecular Crystals and Liquid Crystals, vol. 370, pp 35-38, 2001).

29. Concerning claims 1,4, and 24-25, Kim et al. describe an organic electroluminescent device comprising an anode of ITO (a well known transparent anode, per claim 4), and a cathode (LiF/Al). Between the anode and cathode is an intermediate portion comprising a hole transporting material (poly(vinylcarbazole) (PVK) and TPD (as discussed above, per claims 24-25) and an electron transport material (BBOT), which forms an exciplex with both PVK and TPD (page 36). Additionally poly-

3-hexylthiophene (P3HT) is included as a luminophore. The combination of the exciplex emissions, emissions from BBOT and emissions from P3HT produces white light.

30. Concerning claims 29-30, Kim et al. disclose the method for producing the electroluminescent device discussed above by depositing a mixture of the above materials in chloroform by spin coating. Where the luminophore was selected to produce a particular wavelength of light (650nm).

Claim Rejections - 35 USC § 103

31. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

32. Claim 1-3, 5, 21-22, 24-25, 27-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giro et al. (Chemical Physics Letters, vol. 318, pp. 137-141, 2000) in view of Lin et al. (Journal of Polymer Research, vol. 2, No. 3, pp. 133-138, July 1995) and Shoustikov et al. (IEEE Journal of Selected Topics in Quantum Electronics, vol. 4, no.1, Jan/Feb 1998).

33. Concerning claims 1-2, 5, 24-25, 27, Giro et al. describe organic electroluminescence devices comprising an anode and cathode, and an intermediate element between the anode and cathode comprising a hole transporting organic material (TPD, per claims 24-25), and an electron transporting material (PBD, per claim 27, but which is not identical to Applicant's PBD of claim 28), where the intermediate

portion comprises either a mixture of materials, or a first layer comprising the hole transporting material dispersed in polycarbonate (per claim 5) and a second layer comprising an electron transporting material, per claim 2 (see figure 2, page 138). Giro et al. report that both devices produce electroluminescence from a mixture of singlet emission from the TPD and exciplex emission from the mixture (in the case of a single layer device), or from the interface of the layers (in the case of a dual layered device).

34. Concerning claims 29, 31, and 33, Giro et al. disclose a method of forming the device whereby the intermediate element is deposited on the anode (per claim 29), or where the first layer comprising the hole transporting material, and polycarbonate (per claim 33) is deposited on the anode, followed by a second layer deposited on the first layer (per claim 31)

35. Giro et al. are silent on the use of a luminophore dopant in the device, particularly in the first layer, or where the dopant is a polyaromatic compound, particularly rubrene, or a method where the luminophore material is chosen to emit radiation of a particular wavelength, or a method where the luminophore is deposited in the first layer.

36. Lin et al. describe organic electroluminescence devices where a mixture of a hole transport material and an electron transport material, which together forms an exciplex, is doped with a luminophore in order to control the wavelength of emission at a particular frequency(see Section 2, page 134, page 135, and figure 8, page 137). Shoustikov et al. further teach that it is well known in the art to dope a small amount of a dye into an OLED, which can lead to significant changes in the color of luminescence

and an improvement in the device properties, based on several different energy transfer properties. (abstract)

37. Given these combined teachings, it would have been obvious to one of ordinary skill in the art to dope a luminophore into the electroluminescence devices described by Giro et al. for the purpose of changing the color of luminescence and improve device properties.

38. Concerning claim 3, 21-22, Shoustikov et al. teach that doping small amounts of dyes into electroluminescent devices alters the color of luminescence and improves the device properties as discussed above, and further disclose that it is known to dope the hole transporting layer rather than the electron transporting layer, as improved properties can result. For instance, Shoustikov et al. specifically teach doping rubrene (per claims 21-22) into a hole transporting layer (comprised of TPD) which gave a greater half life than when doped into an electron transporting layer). Given this teaching, it would have been obvious to one of ordinary skill in the art to use the dopant in the hole transporting (first layer), but also to use rubrene as the luminescent dopant.

39. Concerning claims 30 and 32, Lin et al. and Shoustikov et al. teach that it is known in the art to dope exciplex forming electroluminescent devices with dopants to control the emission color by choosing a luminophore with a specific emission wavelength (per claim 30), and Shoustikov et al. further teach doping the hole transporting layer of the device. Therefore, it would have been obvious to one of ordinary skill in the art to deposit the luminophore material with the hole transporting material and polycarbonate of the device described by Giro et al., for the purpose of

controlling the emission wavelength of the device, and improving the properties of the device as discussed above.

40. Claims 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giro et al., Lin et al., and Shoustikov et al. as applied to claim 1 above, and further in view of Boerner et al. (5,955,836).

41. Concerning claim 26 and 28, Giro et al. describes organic electroluminescent devices comprising an intermediate portion comprising a hole transporting material and electron transporting material, which form an exciplex or electroplex, as discussed above, While Lin et al. and Shoustikov et al. provide motivation and teaching for the use of a luminophore dopant in the device. Giro et al. are silent on the use of m-MTDATA as the hole transporting material.

42. Boerner et al. describe organic electroluminescent devices which include an intermediate portion comprising a hole transporting and electron transporting material which form an exciplex. As examples of the hole transporting material, Boerner et al. disclose MTDATA (identical to m-MTDATA) and TPD (column 2, lines 10-14). As examples of the electron transporting material, Boerner et al. disclose butyl-PBD (identical to PBD of Giro et al.) and PBD (Identical to PBD of Applicant's claim 28) (column 2, lines 18-22).

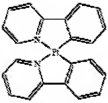
43. Given this teaching it would have been obvious to one of ordinary skill in the art to use MTDATA as the hole transporting material in the electroluminescent device described by Giro et al. since it would be predicted to function in the same way as TPD

and further to use PBD (according to Applicant's Claim 28) as the electron transporting material, since it would be predicted to function in the same way as butyl-PBD (as disclosed in Giro et al.).

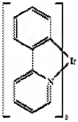
44. Claims 8-15, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (Journal of Polymer Research, vol. 2, No. 3, pp. 133-138, July 1995), in view of Thompson et al. (US 2002/0034656)

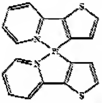
45. Concerning claims 8-15 and 34, Lin et al. describes electroluminescent devices discussed above comprising an intermediate portion comprising a mixture of a hole transporting material and an electron transporting material, and a luminophore to control the emission wavelength of the device. Lin et al. are silent on the use of a phosphorescent dopant in the electroluminescent device.

Thompson et al. describe organic electroluminescent devices, including organometallic complexes as phosphorescent emitters. Thompson et al. disclose that it is advantageous to use phosphorescent dopants to control the emission color of electroluminescent devices because they have high efficiency due to the use of both triplet and singlet excited state energies. ([0007] and [0016]) Thompson et al. disclose numerous organometallic compounds suitable as dopants in organic electroluminescence devices, including iridium complexes such as $Ir(ppy)_3$ shown below, per claims 8-10 and 13-14.[0023] Thompson et al. also disclose platinum bis-cyclometallated complexes such as the structures shown below, per claims 11-12, 15 and 34. [0123]



cis-Bis[2-(2-phenyl)pyridinato-N,C2']Pt(II)
Pt(Phpy)$_2$(1)





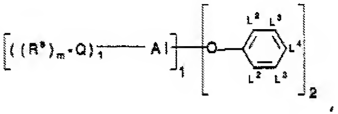
cis-Bis[2-(2'-thienyl)pyridinato-N,C3']Pt(II)
Pt(Thpy)$_2$(2)

46. Given this teaching, it would have been obvious to one of ordinary skill in the art to use the phosphorescent dopants described by Thompson et al. in an electroluminescent device described by Lin et al. for the purpose of improving the efficiency of the device by utilizing both triplet and singlet excited states to produce emission.

47. Claims 16-17 and 19-20, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (Journal of Polymer Research, vol. 2, No. 3, pp. 133-138, July 1995), in view of Moore et al. (EP 0579151).

48. Concerning claims 16-17 and 19-20, Lin et al. describe the organic electroluminescent device discussed above, where the luminophore material is used to control the emission wavelength of the device. Lin et al. are silent on the use of an aluminum or gallium organometallic complex as the luminophore material.

49. Moore et al. describe organic electroluminescent devices where aluminum complexes are used as light emitting materials. Included among the materials is material of the following structure where Q is an 8-quinolinolato ring nucleus (per claim 19). Moore et al. teach both the phenol and biphenol structures (see table 3, page 8).



50. Given the use of the above material as light emitting material in an electroluminescent device, it would have been obvious to one of ordinary skill to use the above material as light emitting material in an electroluminescent device described by Lin et al., for the purpose of controlling the wavelength of emission of the device.

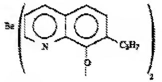
51. Claims 18, and 35-36, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (Journal of Polymer Research, vol. 2, No. 3, pp. 133-138, July 1995), in view of Sano et al. (5,456,988).

52. Concerning claims 18 and 35-36, Lin et al. describe the organic electroluminescent device discussed above, where the luminophore material is used to control the emission wavelength of the device. Lin et al. are silent on the use of an beryllium or zinc organometallic complex as the luminophore material.

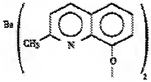
53. Sano et al. describe organic electroluminescent devices where the light emitting layer comprises an 8-quinolinol derivative metal complex.(abstract) Sano et al. disclose

that the metal complex may be used as a dopant in the light emitting portion (column 7, lines 10-11), and discloses the following structures (column 7).

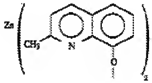
[chemical formula 123]



[chemical formula 124]



[chemical formula 125]



54. Concerning claim 36, since the phenoxide is an optional feature, in compounds according to claim 18 where m is 2 (as shown above), the limitations of claim 36 are met.

55. Given the teaching by Sano et al. it would have been obvious to one of ordinary skill in the art to use the compounds described as light emitting dopants in a device described by Lin et al. for the purpose of controlling the color of light emission.

56. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (Journal of Polymer Research, vol. 2, No. 3, pp. 133-138, July 1995), in view of Fottori et al. (Synthetic Metals, vol. 111-112, pp. 83-86, 2000).

57. Concerning claim 23, Lin et al. describe the organic electroluminescent device discussed above, where the luminophore material is used to control the emission wavelength of the device. Lin et al. are silent on the use of a thiophene derivative as the luminophore material.

58. Fottori et al. describe organic electroluminescent devices where the light emitting layer is doped with a quinquethiophene derivative as the light emitting material having the structure shown below. Devices using this material showed good electroluminescent efficiency.

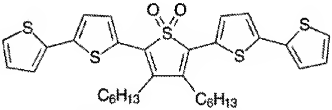


Fig. 1. Molecular structure of T5Ohex.

59. Given this teaching, it would have been obvious to one of ordinary skill in the art to use the thiophene compound shown above as a light emitting dopant in an electroluminescent device described by Lin et al. for the purpose of controlling the color of emission of the device.

Conclusion

60. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Boerner et al. EP 0831676 is the same as Boerner et al. (5,955,836) but does not teach the use of a luminophore material in the device. Forrest

et al. (WO 2001/39243) and Kalinowski et al. (Japanese Journal of Applied Physics) and Fattori et al. (Synthetic Metals) do not disclose the use of exciplex forming materials in the electroluminescent device. Giro et al. (Materials Research Society Symposium Proceedings) does not teach the use of a luminophore dopant in the electroluminescent device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL E. NELSON whose telephone number is (571)270-3453. The examiner can normally be reached on M-F 7:30am-5:00pm EST (First Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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